ANTENNAL ANOMALY IN *OXYPODA OPACA* (COLEOPTERA: STAPHYLINIDAE) FROM NEW YORK[1]

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ABSTRACT: A specimen of *Oxypoda opaca*, collected in Tompkins Co., NY, in June 1988, was found to exhibit a teratological aberration of its left antenna, whereby the distal antennomeres (articles III-XI) are compressed into a short, club-like structure. This aberration is illustrated by scanning electron microscopy, and compared with appendage anomalies previously recorded in other *Oxypoda* species.

Instances of teratology (i.e., individuals exhibiting structural abnormalities) are not uncommon in many species of beetles (Coleoptera), especially among artificially reared specimens (Crowson, 1981). Teratological malformations have been studied and categorized for the Coleoptera in the monographic works of Balazuc (1948, 1969).

Among members of the family Staphylinidae, the phenomenon of teratology was reviewed in some detail by Frank (1981) who chronicled all recorded morphological aberrations, including the presence of supernumerary appendages, fusion or loss of appendages, anomalies of body segmentation and malformations of the thorax and male genitalia. Recently, Segers (1987) reported a case of triophthalmy and other teratological aberrations in the Staphylinidae, anomalies previously unreported for the family.

Because of a paucity of published information on teratological specimens in the largest of the staphylinid subfamilies, the Aleocharinae, it seems advisable to report on morphological abnormalities exhibited in specimens taken under natural conditions. Therefore, in this note I document a teratological specimen of the aleocharine *Oxypoda opaca* (Gravenhorst), a Palearctic species recently reported for the first time from North America (Hoebeke, 1989). This teratology, an antennal malformation, is thoroughly described and further illustrated with scanning electron photomicrographs. Additional literature on teratologies in members of the genus *Oxypoda* is summarized.

A single New York specimen was found to have an extreme aberration of the left antenna, a type of meiomely (following the classification and terminology of Balazuc, 1948). The antenna is 3-segmented; antennomeres III-XI are apparently compactly fused, resulting in a clubbed structure with no apparent segmentation (Figs. 1-3). The basal article (scape) is somewhat stouter than that of the normal antenna, but article

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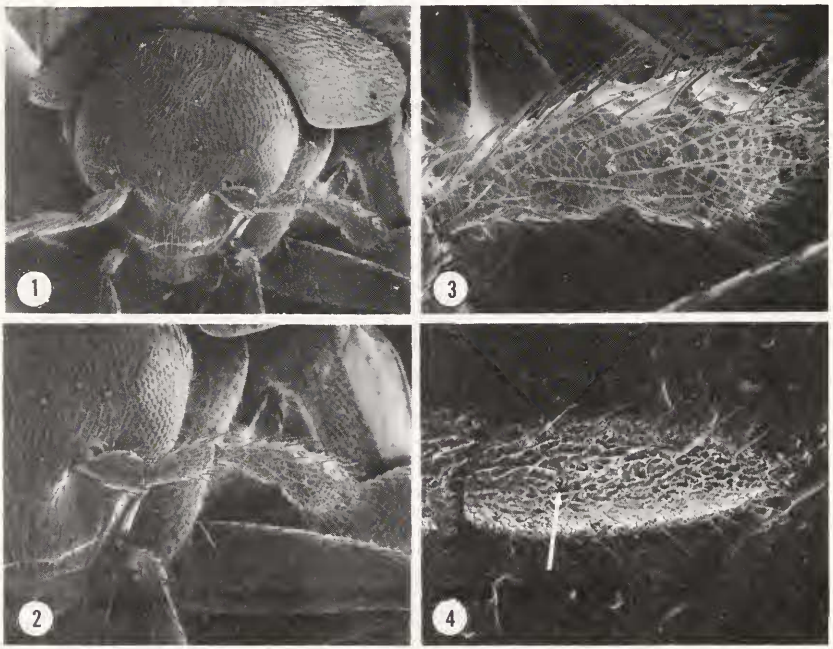
II appears to be of nearly normal dimensions. Visible at high magnification (540x), there are two large, craterlike structures, perhaps thermo- or hygroreceptors, in juxtaposition on the dorsal surface (Fig. 3). In addition to being strongly setose, the surface of the "club" is covered with microsculpture consisting of an imbricate network of distinct microlines. The overall length of the abnormal left antenna is 0.48 mm, compared to 1.17 mm for the normal right antenna.

The normal 11-segmented, right antenna is characterized as follows: basal article (scape) and articles II and III elongated; articles IV-X subquadrate to feebly transverse and not increasing much in length; and terminal article (XI) elongate, pointed apically and equal to or slightly longer than articles IX+X combined. The terminal article of the normal antenna bears a pair of rather small, inconspicuous coeloconica-type sensilla, probably thermo- or hygrosensitive in function. One sensillum is located on the dorsal surface (Fig. 4, arrow) while the other occurs on the opposite (ventral) side.



Figs. 1-4. Scanning electron photomicrographs of adult *Oxypoda opaca*. 1, Frontal aspect of head showing abnormal left antenna, 125x. 2, Closeup of abnormal left antenna, 208x. 3, Enlargement of "club" of abnormal left antenna, 540x. 4, Terminal article (XI) of normal antenna showing coeloconica-type sensillum (arrow) (dorsal surface), 350x.

It is not possible to ascribe the antennal aberration described above to any genetic mechanism (mutational) or to any other external factor (i.e., extreme environmental conditions, injury, etc.) acting on an earlier developmental stage such as the pupa.

Although the pair of sensilla on the apical segment of the normal antenna (Fig. 4, minute, coeloconica-type, dorsal/ventral in position) are very different from the pair of "sensilla-like" structures on the deformed antenna (Fig. 3, extremely large, crater-like, dorsal/dorsal in position), I surmise that these structures are probably homologous. Thus, it is the author's opinion that the deformed antenna does indeed represent an entire antenna and not a partial one, with the loss of intermediate or apical segments.

The coated specimen is deposited in the Cornell University Insect Collection. Complete collection data are as follows: NY: Tompkins Co., Town of Ulysses, N. of Jacksonville, 22 June 1988, E. R. Hoebeke. (male).

A search of the literature reveals 3 other references to teratology of appendages in *Oxypoda*. Uhmann (1919) reported a specimen of *O. opaca*, found near Dresden (E. Germany), with an abnormal right antenna. The distal antennomeres, beyond article V, were shorter in length and more compressed than the analogous articles of the normal left antenna. Segmentation, however, was still evident in the abnormal antenna. Keys (1936) documented a specimen of *O. opaca* from New Forest (S. England) with "four segments only to each of its anterior tarsi, whereby its tarsal formula was 4-5-5 instead of the 5-5-5 which is proper to the genus." Segers (1987) presented a case of symphysomely (the left antenna showing 2 partly fused articles) in a normal female of *O. brachyptera* (Stephens) collected from a pasture at Poeke (Belgium, 6-5-1982, trapped in pitfalls).

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BOOK REVIEW

WORLD CROP PESTS. W. Helle, Editor in chief. 1989. Elsevier Publ. Co., Amsterdam, The Netherlands, and P.O. Box 1663, Grand Central Station, New York, NY 10163

VOL. 3A. FRUIT FLIES: THEIR BIOLOGY, NATURAL ENEMIES, AND CONTROL. A.S. Robinson & G. Hooper, eds 1989. $161.

This volume was not reviewed. The four major parts deal with Taxonomy and Zoogeography; Pest Status; Biology and Physiology; and Behavior.

VOL. 3B. FRUIT FLIES: THEIR BIOLOGY, NATURAL ENEMIES, AND CONTROL. A.S. Robinson & G. Hooper, eds. 1989.

This is the second of two volumes dealing with the frugivorous Tephritidae. It is divided into 5 sections concerned with Genetics, Rearing, Population detection, Ecology and Control. Under these basic headings the 43 contributing authors address topics from the specific ("ie. Cytoplasmic Incompatibility in *Rhagoletis Cerasi*") to the general (ie. "Life History Strategies of Tephritid Fruit Flies"). The graphics are well presented and the book attractively designed.

In addition to scope this volume has depth. The abundance of organized references alone is invaluable to anyone used to dealing with the cosmopolitan and often scattered fruit fly literature. Within minutes of opening the book, I had found interesting but unfamiliar data and papers. However, the reader should be warned that there was considerable delay between the writing of many of these chapters and publication so that there are fewer recent citations than the 1989 publication date would suggest.

With that caveat excepted, I believe this book would be an important reference to anyone with an interest in fruit flies. This includes not only those who are directly involved with fruit fly control but also those interested in the more "basic" endeavors of Ecology, Behavior, etc. I, for one, already find myself referring to one or the other of these volumes several times a day.

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